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Interstitial Emphysema Following a Suicide Attempt by Hanging: A Case Report

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Abstract **Case Report**

We report the case of a 26-year-old patient admitted to the emergency department after a suicide attempt by hanging, presenting with dyspnea. The initial clinical examination revealed signs of strangulation without any apparent neurological abnormalities. Brain and cervical CT scans were unremarkable. A thoracic CT scan showed interstitial emphysema along the bronchovascular axes and fissures, attributed to the Macklin effect, without pneumothorax or pneumomediastinum. This case highlights the importance of a thorough thoracic evaluation in patients presenting with dyspnea after a hanging attemp.

Keywords: Hanging; Suicide attempt; Pulmonary interstitial emphysema; Macklin effect; Computed tomography; Pneumomediastinum; Respiratory complications; Aspiration.

INTRODUCTION

Hanging is a suicide method associated with a high mortality rate. Among the potential complications, neurological and vascular injuries are the most feared. However, respiratory manifestations can also occur, including interstitial emphysema secondary to the Macklin effect [1–3]. We present here an unusual case of isolated interstitial emphysema without pneumothorax or pneumomediastinum.

CASE PRESENTATION

We report the case of a 26-year-old male patient admitted to the emergency department following a suicide attempt by hanging. Upon arrival, he presented with dyspnea but was hemodynamically stable. The initial clinical examination revealed signs of strangulation, including cervical bruising and petechiae, but no apparent neurological deficits.

A brain and cervical CT scan showed no abnormalities. However, a thoracic CT scan revealed interstitial emphysema extending along the bronchovascular axes and fissures, attributed to the Macklin effect [2,3]. Notably, there was no associated pneumothorax or pneumomediastinum.

The CT scan also revealed a left basal consolidation with an air bronchogram, surrounded by ground-glass opacities with reticular infiltrates, indicative of aspiration.

The patient received supportive care with oxygen therapy and close monitoring. His respiratory symptoms gradually improved.

CT Imaging Findings

Thoracic CT scan in lung window with axial cuts (Figure 1 and 2), coronal cut (figure 3), and mediastinal window in axial cut (figure 4): interstitial emphysema along the bronchial axes and pulmonary fissures (orange triangles). The CT scan also revealed a left basal consolidation with an air bronchogram, surrounded by ground-glass opacities (blue arrow).

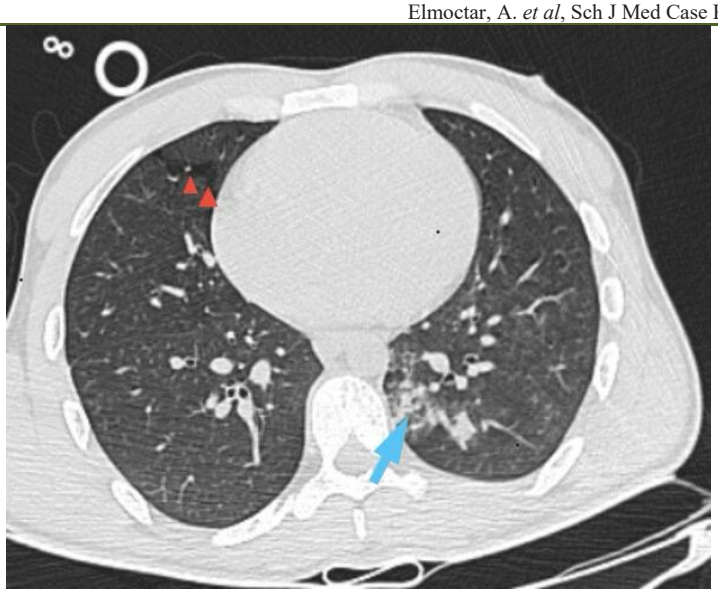

Figure 1

Figure 2

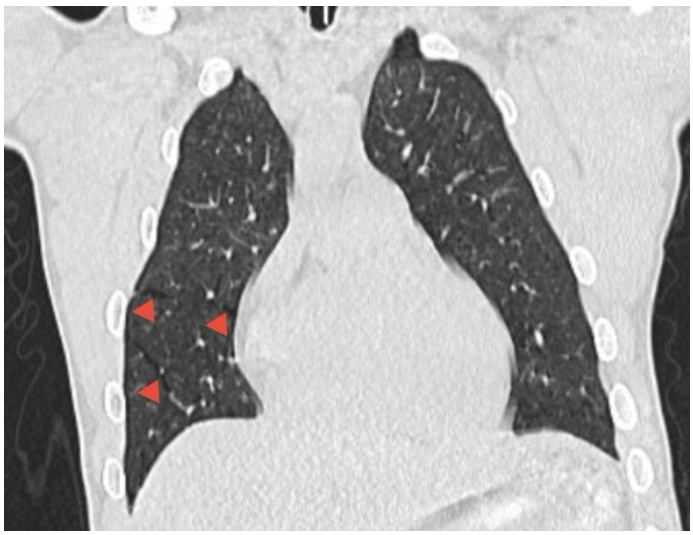

Figure 3

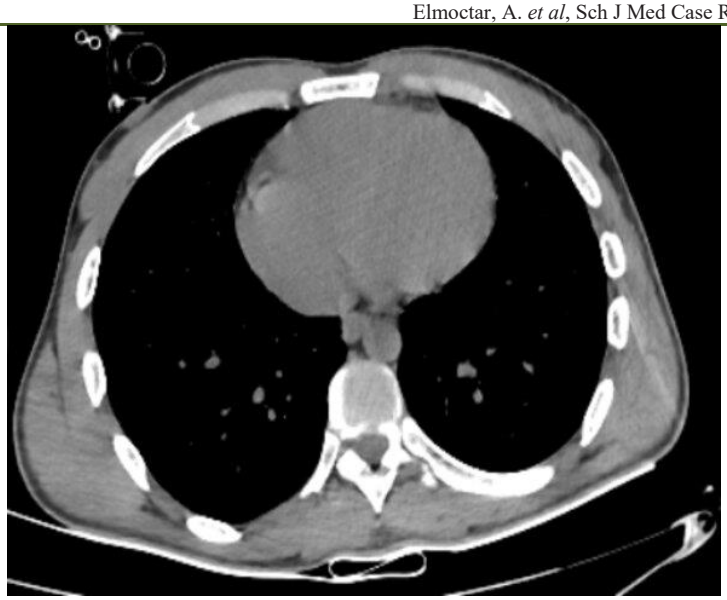

Figure 4

DISCUSSION

The Macklin effect corresponds to a sudden increase in intra-alveolar pressure, leading to alveolar rupture and the diffusion of air into the pulmonary interstitium [1,2]. This phenomenon is more commonly associated with blunt thoracic trauma or asthma attacks but can also occur in the context of strangulation by hanging due to thoracic hyperpressure secondary to upper airway obstruction [4,5].

The absence of pneumothorax or pneumomediastinum in our case is unusual and could be explained by a localized diffusion of air within the interstitium without rupture into the pleural or mediastinal spaces.

Previous reports have documented pneumomediastinum and cervical soft-tissue emphysema following hanging, supporting the possibility of pressure-related air leakage in this setting [4,5]. In a prospective autopsy study of 83 hanging cases, Nikolić *et al.,*found cervical soft-tissue emphysema in 44 cases and discussed the Macklin effect as one possible mechanism [5]. Aghayev *et al.,*also reported pneumomediastinum and cervical soft-tissue emphysema in three of five hanging cases examined by postmortem CT and MRI [4].

The patient was admitted to the intensive care unit and received symptomatic treatment. The clinical course was favorable, with spontaneous resolution of symptoms within a few days without secondary complications.

CONCLUSION

Post-hanging interstitial emphysema is a rare but important diagnosis to consider in the presence of persistent dyspnea, even in the absence of neurological or vascular abnormalities. Thoracic imaging plays a crucial role in the evaluation of these patients, helping to guide management and anticipate potential respiratory complications.

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